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May 28, 2020

Norah Potter
Lake Union Partners - Rainier & Genesee LLC
401 N 36th Street, Suite 104
Seattle, WA 98103

Re: Opinion pursuant to WAC 173-340-515(5) on Remedial Action for the following Hazardous Waste Site:

- **Site Name:** Rainier Mall
- **Site Address:** 4208 Rainier Avenue South, Seattle, WA 98118
- **Facility/Site No.:** 88987973
- **Cleanup Site ID:** 4187
- **VCP Project No.:** NW3261

Dear Norah Potter:

The Washington State Department of Ecology (Ecology) received your request for an opinion on work planned at the Rainier Mall facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Issue Presented and Opinion

Pursuant to completion of the Site characterization work described in the *Remedial Investigation Work Plan* (*Work Plan*) dated February 21, 2020, is additional work necessary to resolve data gaps?

YES. Ecology has determined that additional information will be needed after implementation of the *Work Plan* to characterize the Site per MTCA requirements, in order to support evaluation of options for completion of the cleanup process for this Site under the VCP.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Tetrachloroethylene (PCE) and related degradation products that are chlorinated volatile organic chemicals (cVOCs) into the soil, ground water, and soil vapor.
- Suspected carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) into the soil and ground water.
- Oil-range petroleum hydrocarbons (TPH-O) into the soil.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. Hahn and Associates, Inc. 2000. Phase I Environmental Site Assessment: Rainier Mall. May 23.

2. Hahn and Associates, Inc. 2000. Phase II Environmental Site Assessment: Rainier Mall. August 1.

3. SoundEarth Strategies, Inc. 2017. Subsurface Investigation Summary Letter: Rainier Mall Property. March 31.

4. SoundEarth Strategies, Inc. 2018. Draft Subsurface Investigation Summary Report: Rainier Mall North Property. March 20.

5. SoundEarth Strategies, Inc. 2018. Draft Subsurface Investigation Summary Report: Rainier Mall South Property. March 22.

6. SoundEarth Strategies, Inc. 2018. Draft Supplemental Subsurface Investigation Summary Letter: Rainier Mall Property. October 29.

7. Department of Ecology. 2019. Rainier Mall - Site Hazard Assessment. July 15.

8. Urban Environmental Partners LLC. 2020. Remedial Investigation Work Plan, Rainier Mall Property, 4208 Rainier Avenue South, Seattle WA 98118, King County Parcel #7950301480, February 21, 2020.

These documents are kept in the Central Files of the Northwest Regional Office of Ecology NWRO) for review by appointment only. You can make an appointment by creating an

account at Public Records Request Center. If you require assistance with this process, you may contact the Public Records Officer at publicrecordsofficer@ecy.wa.gov or 360-407-6040. A number of these documents are accessible in electronic form from the Site web page. https://apps.ecology.wa.gov/gsp/CleanupSiteDocuments.aspx?csid=4187

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis and Opinion

Based on a review of the *Work Plan*, Ecology has determined:

- Implementation of The Work Plan is an important step towards continued Site cleanup progress and is expected to support refinement of the Site characterization and Conceptual Site Model (CSM).

- The ground water elevation contour map developed from ground water elevations on April 16, 2019 (Figure 5 of the *Work Plan*) includes an elevation of 32.97 feet in MW02, which is not consistent with the contours. Please recheck this data point and revise the map, as appropriate. Also, please include data tables with well screen depths and elevations, ground water levels, and ground water elevations for all monitoring wells.

- When preparing future ground water elevation contour maps, evaluate impacts of variable depth and length of well screens (up to 20 feet long) on ground water elevations with respect to vertical gradients, and select representative water level data to best represent horizontal ground water flow conditions. Also, the vertical elevation datum for contour maps should be North American Vertical Datum of 1988 (NAVD 88).

- Evaluate the effects of long monitoring wells screens (up to 20 feet long) on collection of representative ground water samples for analysis of cVOCs. Include an assessment of sampling pump intake placement within a long well screen versus cVOC distribution in the screened formation.

- Considering the direction of ground water flow suggested by the April 16, 2019 measurements, and all three easternmost wells having ground water analysis results exceeding cVOC cleanup levels, the eastern ground water plume extent has not been delineated.

    - A groundwater monitoring well in the southeast corner of the property is

necessary to delineate the eastern extent of the groundwater plume, including soil samples analyzed for cVOCs. Soil and ground water samples should be collected at depths sufficient to delineate the vertical extent of cVOC contamination.

- The western extent of groundwater impacts are defined by two wells installed by angle drilling methods and sampled once in 2010. Ground water samples from wells MW08 and MW05, installed between the angled wells, exceeded MTCA Method A cleanup levels by several orders of magnitude.

    - Collection of samples for cVOCs in ground water is necessary for monitoring wells MW06, MW07, and MW08.

- As shown in Figure 7 of the *Work Plan*, the soil impacts along the western property boundary have not been delineated. The sanitary sewer line directly adjacent to the observed soil impacts has potential to be a preferential pathway, particularly if there is still a connected lateral in the area of MW08 as shown in the figures.

    - A quantitative gas sample from the sanitary sewer line near MW08 and/or a quantitative soil gas sample in the area of the former northern dry cleaner location, analyzed for cVOCs, is necessary to assess the sanitary sewer line as a potential preferential pathway. There is a concern that cVOC vapors may become elevated in the sanitary sewer during remedial activities.

    - For guidance on screening sewer lines see *Sewers and Utility Tunnels as Preferential Pathways for Volatile Organic Compound Migration into Buildings: Risk Factors and Investigation Protocol*; ESTCP Project ER-201505; November 2018 (https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Emerging-Issues/ER-201505).

- The depth of cVOC impacts to soil in the southeastern portion of the site are not delineated. The highest cVOC soil concentrations measured from MW10 were at the deepest analyzed sample at 28 feet. Other soil borings in the southeastern part of the property (i.e. MW09, B-3, and SB04) were not sampled at depths greater than 20 feet. Soil impacts were first encountered at 25 feet bgs in MW10.

- MW10 is also the current southernmost and easternmost sampling location. Soil impacts exceeding cVOC cleanup levels indicate the western and southern soil impacts are not delineated.

  - Ground water delineation of the southeastern extents will likely resolve soil delineation concerns. Soil and ground water samples should be collected at depths sufficient to delineate the vertical extent of cVOC contamination.

- The depth of TPH-O impacts have not been delineated, including potential impacts to ground water.
  - Soil and ground water samples below the depth of known TPH-O impacts are needed.

- Three soil gas sample locations are shown on Figure 10 without associated data.
  - Please include soil gas sample location details and any analytical data collected from each location.

- Ecology requests the following revisions to the hydrogeologic cross sections in the *Work Plan* (Figures 6 and 7):
  - Figures 6, 7, and all future cross sections
    - The vertical scale on all cross sections should be elevation relative to mean sea level (NAVD88), rather than depth below ground surface.
    - Show ground water levels and dates for any temporary and permanent wells shown on the sections.
    - Show the elevations at which ground water samples were collected.
    - Include the total depth and stratigraphy for deep boring B05, which was drilled to a depth of 90 feet bgs.
  - Cross Section A-A' (Figure 6)
    - B03 should be labeled SB03; B03 was extended deeper and included analytical results exceeding cleanup levels.
    - Include projection distances for MW05 and MW08.
    - Include SB04 and SB07 in the cross section.
    - Include B14, MW08 (B18), and TB08 at 17.5 feet bgs with chemical

data Cross sections should be based on elevations to represent site conditions.

- Cross Section B-B' (Figure 7)
  - Use of the term "perched groundwater results" is premature until the CSM determines if the uppermost zone of saturation is a perched ground water condition.
- Incorporate above changes in cross sections included in the RI Report, if appropriate.

- Font size on Tables and maps should be at least 10 point so they are legible.

- Please provide depths (below ground surface) and elevations of the screened intervals for temporary wells B16/MW06 and B15/MW07. This information should be included in a comprehensive summary table of all borings and monitoring wells drilled on the Site, with all boring logs and monitoring well construction diagrams included in an appendix.

- A Terrestrial Ecological Evaluation (TEE) is required per WAC 173-340-7490, to determine if cleanup levels that are protective of terrestrial species are applicable to the Site. The first step is to determine if the Site is excluded from having to conduct a TEE. If the Site does not qualify for an exclusion, but qualifies for a simplified TEE, it must be conducted and the results presented to Ecology. TEE instructions and forms are available at: https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Terrestrial-ecological-evaluation .

- Entry of Site data into EIM must be completed and confirmed prior to issuance of a NFA opinion letter. To date, none of the Site data has been entered. Ecology recognizes the difficulty of manually entering data from historical hard copy reports into EIM. Therefore, we request that the consultant determine the earliest date that electronic laboratory data are available and upload data from that date forward into EIM. Information regarding EIM can be found at: https://ecology.wa.gov/Research-Data/Data-resources/Environmental-Information-Management-database .

- Incorporate the results from implementation of the Work Plan, and the recommendations in this opinion letter, into a Remedial Investigation (RI) report that meets the requirements of the RI checklist (see https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-process/Cleanup-options/Voluntary-cleanup-program/Reporting-requirements).

- Upon completion of a RI report that meets MTCA requirements, prepare a complete Feasibility Study (FS) that meets the requirements of the FS checklist (see reference in prior paragraph).

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me by phone at 425-649-7265 or e-mail at Tanner.Bushnell@ecy.wa.gov.

Sincerely,

TANNER BUSHNELL

Tanner Bushnell,

Site Manager
NWRO Toxics Cleanup Program

Enclosures (1): A – Description and Diagrams of the Site

cc: Kimberly Kuhl, Kane Properties LLC
John Funderburk, Urban Environmental Partners LLC
Brian Dixon, Dixon Environmental Services
Sonia Fernandez, VCP Coordinator NWRO

Enclosure A

Description and Diagrams of the Site

Site Description

This section provides Ecology's understanding and interpretation of Site conditions, and is the basis for the opinions expressed in the body of the letter.

Site: The Site is defined as PCE and related degradation products and suspected cPAH contamination from subsurface timber piles impacting soil and groundwater, and TPH-O impacting soil. Passive soil gas samples suggest chlorinated and petroleum VOCs vapors are present in the soil. The Site is located on King County tax parcels 7950301480 at the intersection of Rainier Avenue S and S Genesee Street in Seattle, Washington (**Figures 1 and 2**).

Area and Property Description: The Property containing the source area is located within an area of mixed commercial, retail, and residential properties, including a school. The Property is located east of Rainier Avenue, and north of Genesee Street in Seattle, Washington**.** Based on currently available information, the Property containing the source of Site contamination includes 2.3 acres of property zoned for neighborhood commercial use (NC2-40), and is currently occupied by a vacant commercial building and parking lot. The Mount Baker Housing Authority is targeting the Site for a potential redevelopment into multi-family affordable housing.

Property History: Parcel 7950301480 (4208 Rainier Avenue South) is 2.3 acres in size and was reportedly developed with retail and residences beginning in 1929. From 1955 to 1978 up to three of the retail spaces in the southwest corner of the Property were occupied by drycleaners. In 1968 a grocery store was built in the northern portion of the property, with the structure supported by treated timber piles. The currently vacant former grocery store is the only remaining building on the Property.

Sources of Contamination: The sources of contamination include PCE from the three drycleaners formerly located in the southwest part of parcel 7950301480, likely PAH contamination from timber piles supporting the existing building, and the source of oil range petroleum hydrocarbons in soil is unknown.

Physiographic Setting: The Site is situated at an elevation of approximately 45 feet above mean sea level, located within a topographic depression known as Rainier Valley. The land surface of the Site slopes generally to the southeast.

The Rainier Valley is associated with a former tributary stream valley of Lake Washington that was filled in the early 1900s with materials from unknown sources, to create flat land for development. The former stream channel flowed south parallel to Rainier Avenue, then east and northeast towards discharge into Lake Washington. The path of the former stream is evident from the present day Rainier Playfield and Genesee Park and Playfield (see **Figure 1**).

Surface/Storm Water System: Lake Washington is located approximately 2700 feet northeast of the Site (see **Figure 1**). Stormwater catch basins within the Site flow to the municipal storm drainage system.

Ecological Setting: The Property located in a densely developed urban area, is paved with asphalt and gravel cover, and is surrounded by roadways and residential and commercial properties.

Geology: Soils at the Site are mapped as Vashon till. Soils described from boring logs at the Site include approximately 10 to 15 feet of fill material, followed by silt and clay with silty sand layers, and dense silt, to the total depth explored of 90 feet bgs.

Groundwater: Static ground water levels have been measured in monitoring wells at the Site between approximately 7 and 16 feet bgs. Monitoring well ground water elevation data suggests ground water flow approximately follows site topography to the southeast.

Release and Extent of Contamination in Soil and Ground Water:

Soil: Soil samples indicate that soil containing cVOC concentrations greater than MTCA Method A cleanup levels remains in the southwest portion of the Property. Deep cVOC soil impacts have been measured at approximately 30 feet bgs in the S Genesee Street right-of-way. TPH-O was detected in near surface soils, greater than MTCA Method A cleanup levels. Soil may be impacted by cPAHs from the treated wood piles beneath the vacant building on the Property.

Chlorinated VOC concentrations in soil samples collected from borings at the Site are shown on **Figure 4**.

Ground Water: Ground water samples obtained from monitoring wells installed at the former location of the drycleaners and extending south into the S Genesee Street right-of-way contain PCE and/or breakdown products. Ground water PCE concentrations as high as 38,900 µg/L measured from developed wells on the Property suggest the potential for PCE as separate-phase product to be present.

Chlorinated VOC concentrations in ground water samples collected from monitoring wells at the Site are shown on **Figure 5**.

The potential impacts to ground water from cPAHs due to the treated wood piles, and the TPH-O in soil, have not been investigated.

Site Diagrams

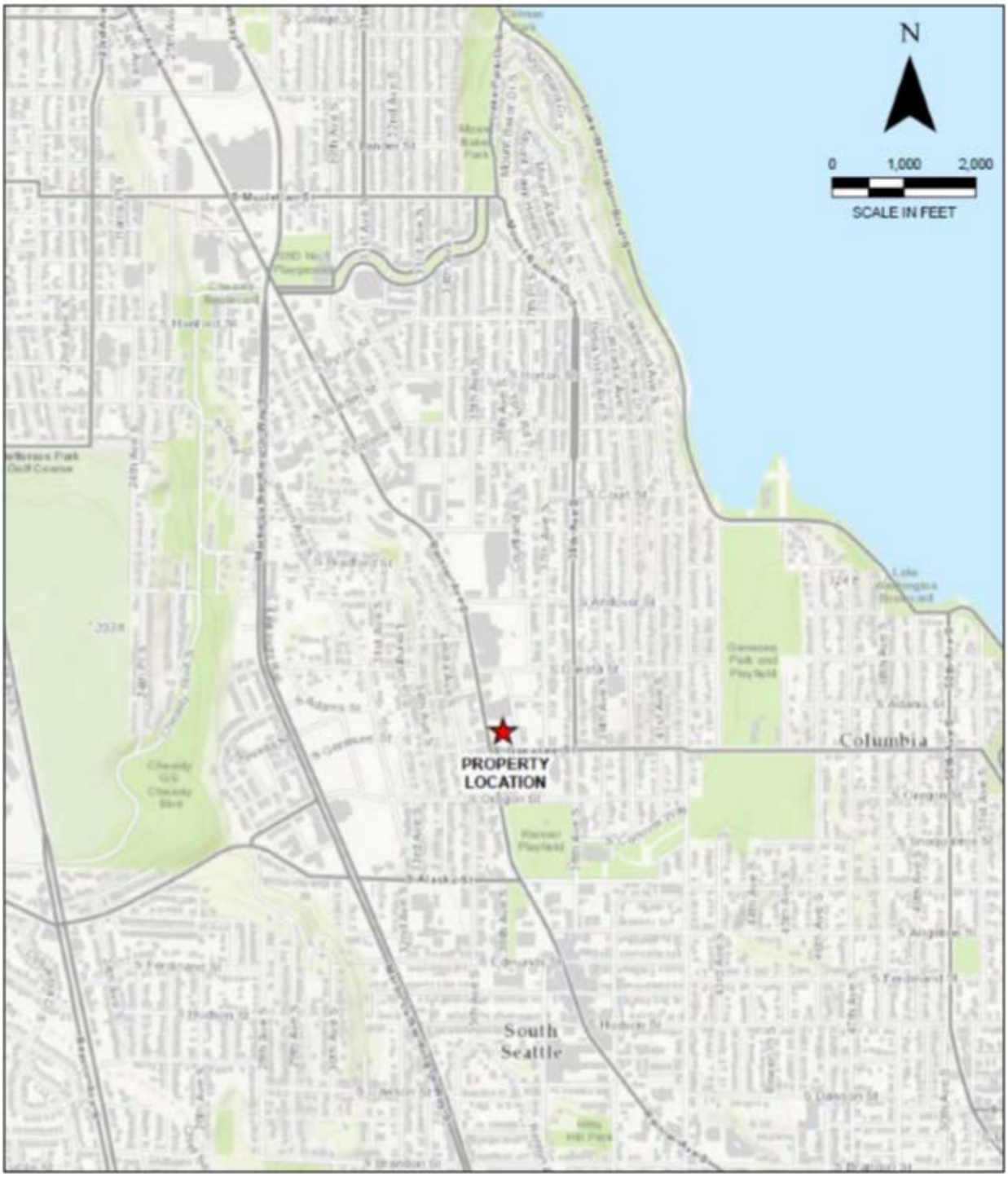


Figure 1: Site location diagram. From Sound Earth Strategies (October 2018).

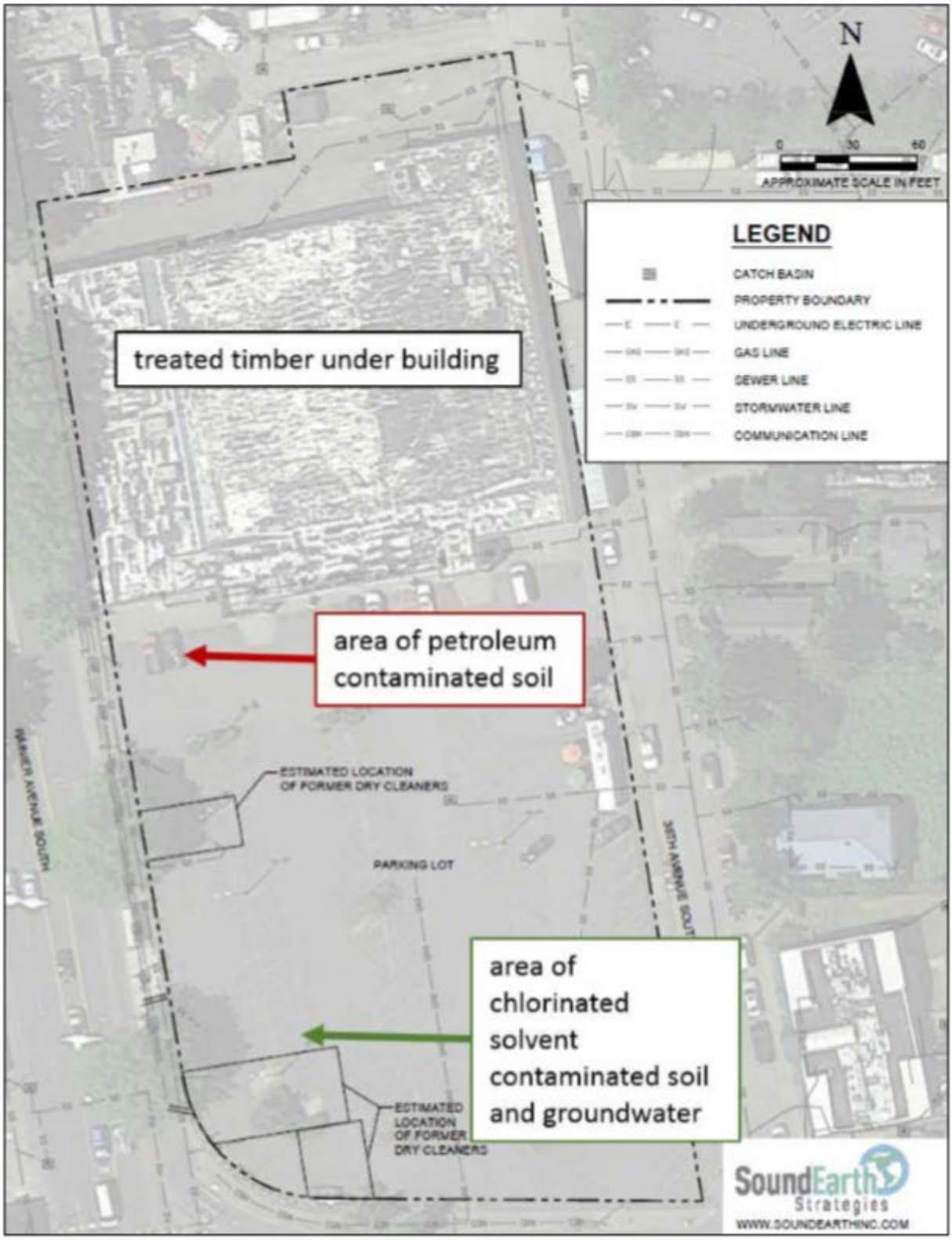
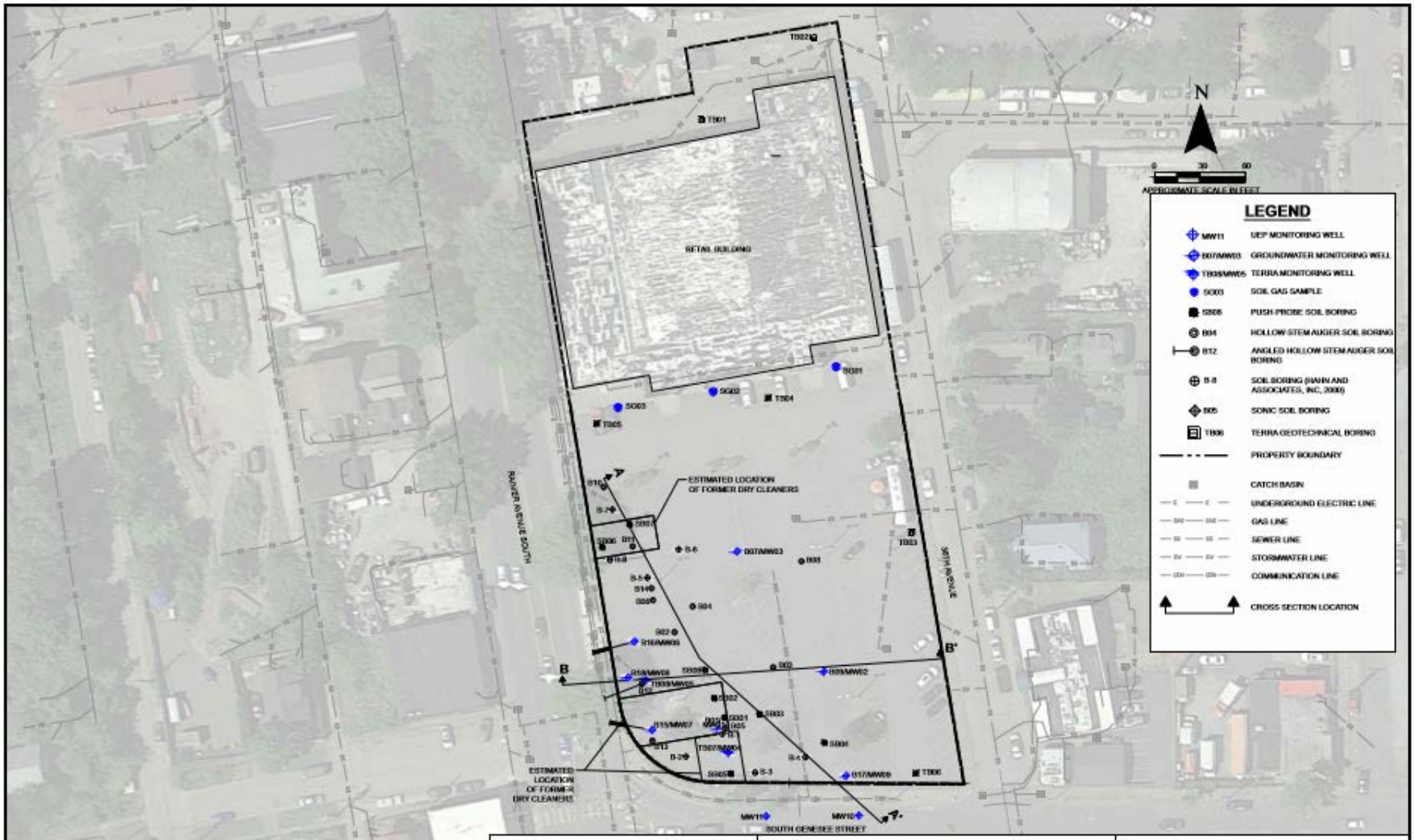


Figure 2: General location of area of contamination on Site. Base map from Sound Earth Strategies (October 2018).



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Rainier Mall Site
4208 Rainier Avenue South
Seattle, WA

Figure 3
Exploration Location Plan

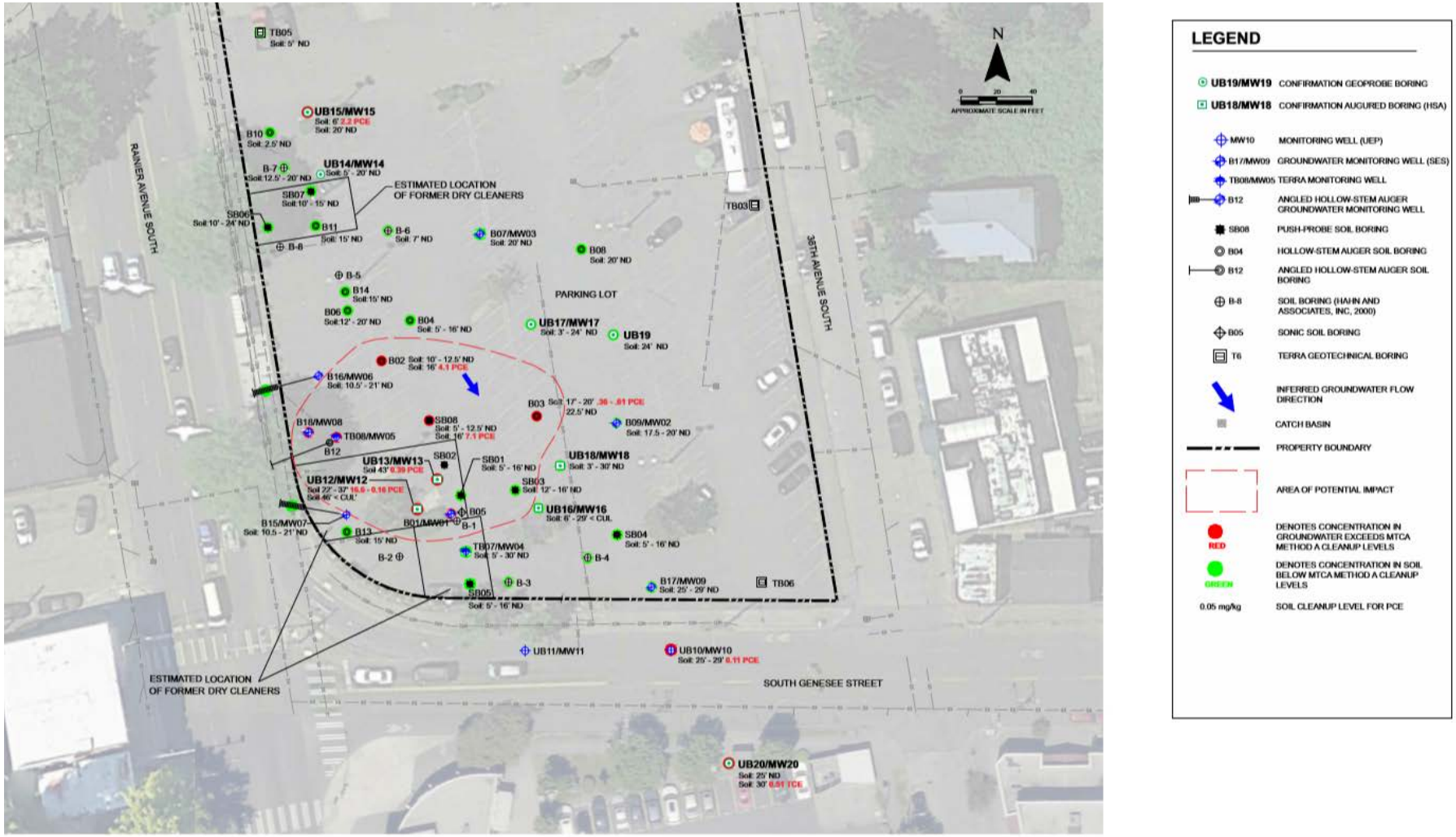


Figure 4: cVOC soil data. While not represented in the figure, soil data from B-1, SB01, SB02, B04, B06, B12, B14, and B16 included PCE and/or TCE concentrations in excess of MTCA Method A cleanup levels. From Urban Environmental Partners LLC (March 2020).

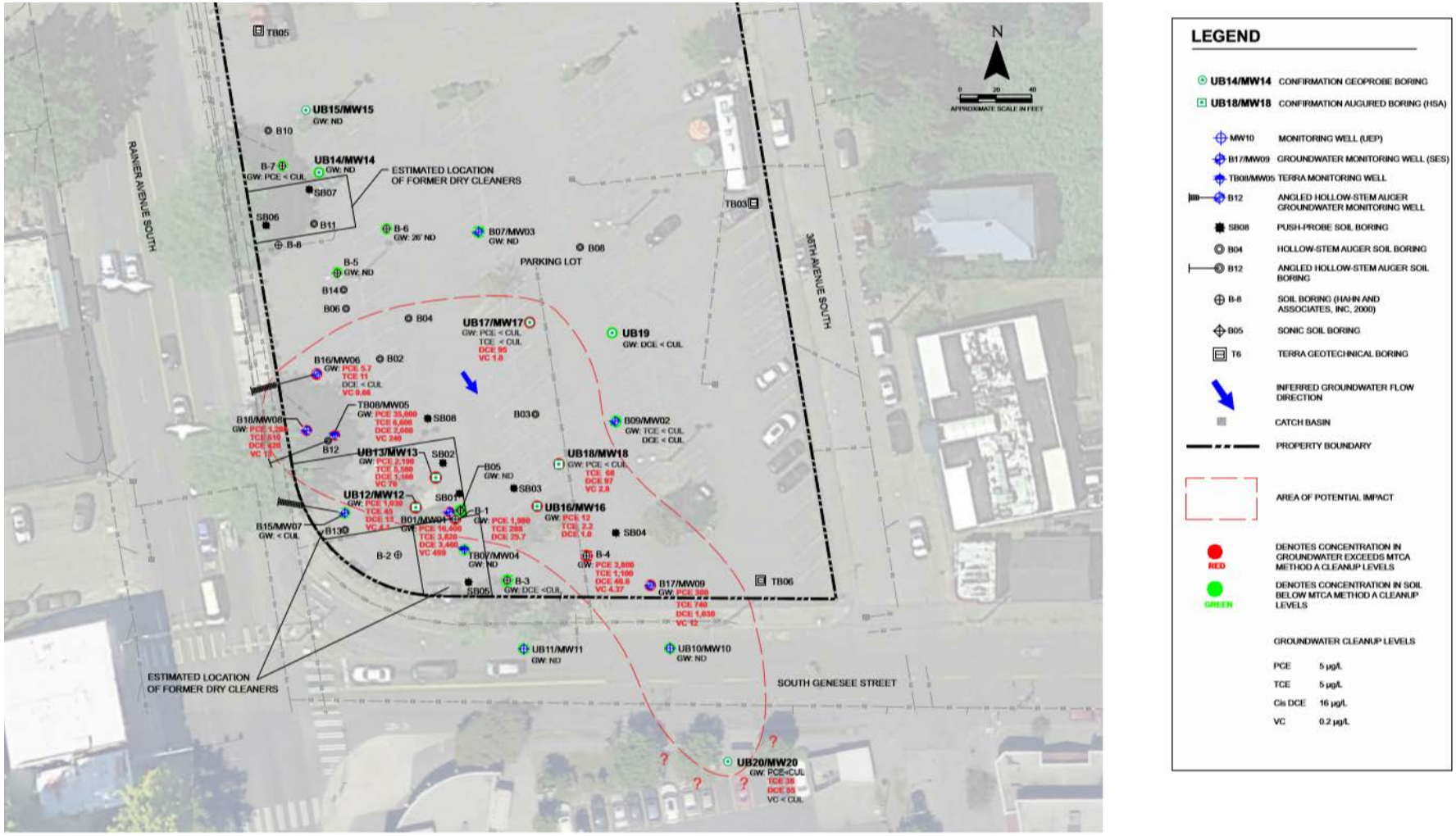
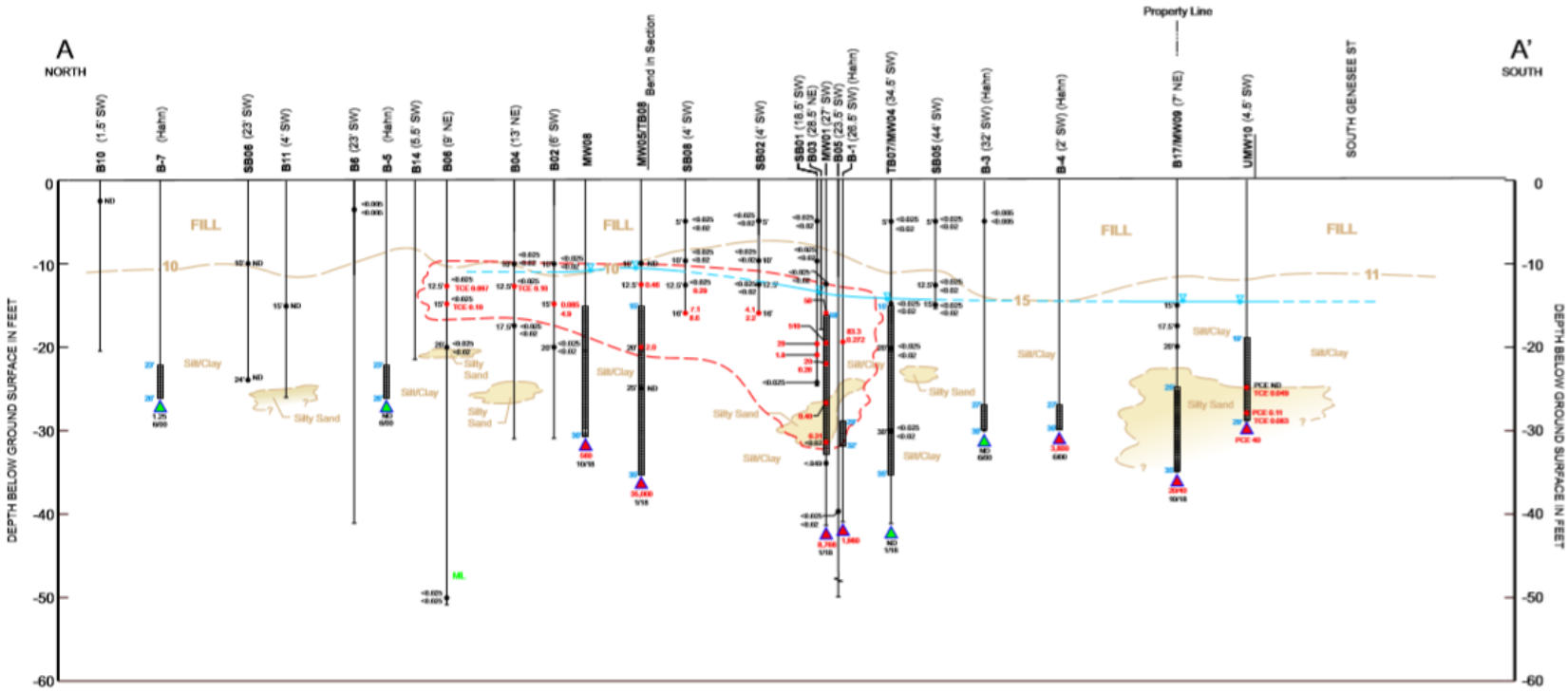


Figure 5: cVOC groundwater data. Data presented includes groudwater samples collected between June 2000 and March 2020. From Urban Environmental Partners LLC (March 2020).



LEGEND

(1' SOUTH) OFFSET 1' SOUTH

MONITORING WELL

SCREEN INTERVAL

GROUNDWATER LEVEL

APPROXIMATE EXTENT OF PCE-IMPACTED SOIL

CONCENTRATIONS OF CHEMICALS OF CONCERN IN SOIL (mg/kg):

CONCENTRATION BELOW MTCA METHOD A CLEANUP LEVEL

CONCENTRATION ABOVE MTCA METHOD A CLEANUP LEVEL

SOIL RESULTS (mg/kg):

<0.025 PCE

0.29 TCE

GROUNDWATER PCE IN µg/L

RED DENOTES CONCENTRATIONS EXCEEDING MTCA METHOD A CLEANUP LEVELS

mg/kg	MILLIGRAMS PER KILOGRAM
µg/L	MICROGRAMS PER LITER
RED	DENOTES CONCENTRATIONS EXCEEDING MTCA METHOD A CLEANUP LEVELS
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
MTCA	WASHINGTON STATE MODEL TOXICS CONTROL ACT
bgs	BELOW GROUND SURFACE
VC	VINYL CHLORIDE

Horizontal Scale in Feet

0 25 50

0 12.5 25

Vertical Scale in Feet

Vertical Exaggeration X 2

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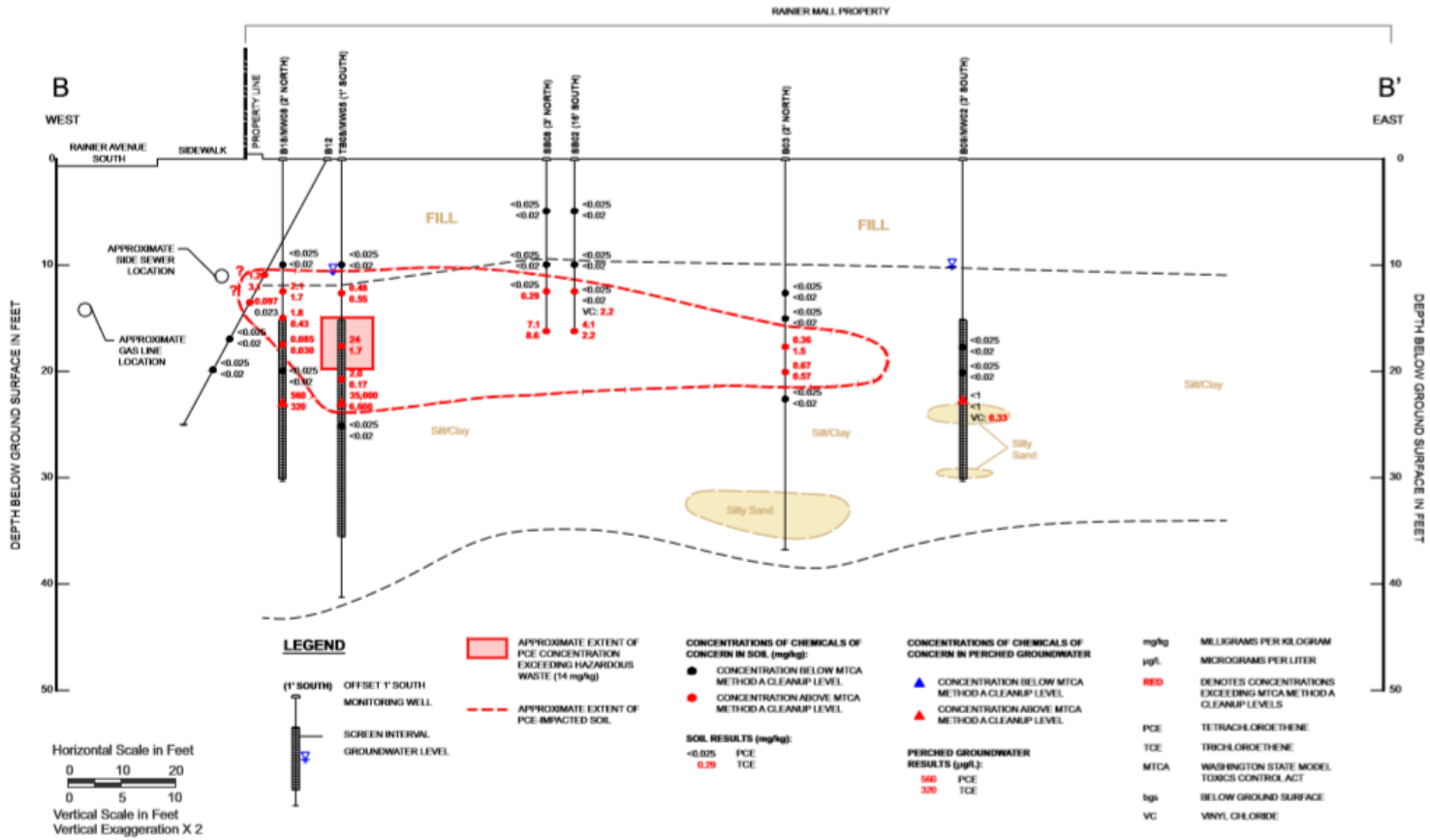
Rainier Mall Site
4208 Rainier Avenue South
Seattle, WA

Figure 6
Cross Section A-A'



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Rainier Mall Site
4208 Rainier Avenue South
Seattle, WA

Figure 7
Cross Section B-B'